

Amendments to the Specification:

Please replace the paragraph beginning on line 3 of page 3 with the following amended paragraph:

A method for directly measuring the crater end online is also tried. For example, Patent Document 2 discloses a method comprising the steps of propagating an ultrasonic longitudinal wave through a slab by using a transmitter and a receiver for electromagnetic ultrasonic, and determining respective thicknesses of a solid phase and a liquid phase from the following formula (1) based on the propagation time of an ultrasonic longitudinal wave signal passing through a slab [[5]], the thickness of the slab, and the previously-measured ultrasonic velocities of the longitudinal wave in the solid phase and the liquid phase. In the formula (1),  $d$  is the thickness of the solid phase,  $t$  is the propagation time,  $D$  is the thickness of the slab,  $V_l$  is the average ultrasonic velocity of the longitudinal wave in the liquid phase, and  $V_s$  is the average ultrasonic velocity of the longitudinal wave in the solid phase.

Please replace the paragraph bridging pages 76 and 77 with the following amended paragraph:

While the second ultrasonic shear wave sensor is installed in the sixth embodiment to measure the propagation time of the ultrasonic shear wave signal, the installation of the second ultrasonic shear wave sensor is not always required, and the first ultrasonic shear wave sensor made up of the ultrasonic shear wave transmitter 6 and the ultrasonic wave shear receiver 8 can also be used as the ultrasonic shear wave sensor for measuring the propagation time. In the case of determining the crater end 4 from the propagation time of the ultrasonic shear wave signal, however, the crater end can be determined in a restricted range, i.e., only when the crater end 4 is positioned upstream of the installed position of the ultrasonic shear wave sensor. Therefore, care has to be taken for the installed position of the sensor.